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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/248,392	02/12/99	SPAEPEN H	GB97/023

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
1754	6

DATE MAILED: 03/27/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/248,392	Spaepen
Examiner	**Group Art Unit**
Eileen E. Nave	1754

☒ Responsive to communication(s) filed on *Feb 12, 1999*.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-21* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-21* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☒ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *3 & 5*

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Kosin et al (US 4,888,160).

Kosin et al disclose a carbonation process for producing calcium carbonate from calcium hydroxide derived from limestone which provides improved utilization of the carbon dioxide gas used for the carbonation process (col. 3, ln. 12-16). An aqueous calcium hydroxide slurry is provided in the reaction vessel and is recirculated through the recycle piping system. The calcium hydroxide slurry may be prepared in any manner known in the art. The slurry preferably has a solid content of from about 10 to about 20 weight percent. Higher amounts within this range allow the precipitated products to cluster together (col. 4, ln. 3-15). At least a portion of the aqueous slurry is continuously recirculated through the recycle piping system. The carbon dioxide containing gas is injected into the recirculating aqueous slurry at a turbulent area located in the recycle piping system (col. 4, ln. 17-21). The injection of the carbon dioxide containing gas at a turbulent area in the recycle piping system provides intimate mixing of the gas and the recirculating stream and the carbon dioxide utilization in the final calcium carbonate compound

product approaches 100% (col. 3, ln. 54-59). Preferably, there is at least one of the in-line mixers 38, 40 located in the recycle piping system downstream of the turbulent area, for example the piping bend 32 a, where the carbon dioxide is injected into the recirculating stream. The in-line mixer provides further intimate mixing of the gas and recirculating stream (col. 3, ln. 64-68 to col. 4, ln. 1-2).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosin et al (US 4,888,160), in view of EP 604,095 A1.

Kosin et al discloses a carbonation process for producing calcium carbonate from calcium hydroxide derived from limestone which provides improved utilization of the carbon dioxide gas used for the carbonation process (col. 3, ln. 12-16). An aqueous calcium hydroxide slurry is provided in the reaction vessel and is recirculated through the recycle piping system. The calcium hydroxide slurry may be prepared in any manner known in the art. The slurry preferably has a solid content of from about 10 to about 20 weight percent. Higher amounts within this range allow the precipitated products to cluster together (col. 4, ln. 3-15). At least a portion of the aqueous slurry is continuously recirculated through the recycle piping system. The carbon dioxide containing gas is injected into the recirculating aqueous slurry at a turbulent area located in the recycle piping system (col. 4, ln. 17-21). The injection of the carbon dioxide containing gas at a turbulent area in the recycle piping system provides intimate mixing of the gas and the recirculating stream and the carbon dioxide utilization in the final calcium carbonate compound product approaches 100% (col. 3, ln. 54-59). Preferably, there is at least one of the in-line mixers 38, 40 located in the recycle piping system downstream of the turbulent area, for example the piping bend 32 a, where the carbon dioxide is injected into the recirculating stream. The in-line mixer provides further intimate mixing of the gas and recirculating stream (col. 3, ln. 64-68 to col. 4, ln. 1-2).

Kosin et al does not disclose the use of 3 or more, such as 4 to 7, in-line static mixers; however, one of ordinary skill in the art at the time the invention was made would use 3 or more, such as 4 to 7, in-line static mixers in the process of Kosin et al because the more in-line static

mixers used increases the rate and efficiency of thoroughly mixing the carbon dioxide and the aqueous calcium hydroxide slurry. Kosin et al also does not disclose that the aqueous suspension and/or the carbon dioxide enter the first of the series of mixers at a pressure in the range of 50 kPa to 150 kPa or that the hydraulic pressure of the aqueous suspension and/or carbon dioxide progressively falls as it passes through the series of static in-line mixers; however, one of ordinary skill in the art at the time the invention was made would optimize the hydraulic pressure throughout the process, especially at the static in-line mixers, in order to provide a continuous flow of products as well as intimate mixing.

Kosin et al also does not disclose that the aqueous suspension includes non-consumable solids, such as fibers and/or particles; however, EP 604,095 A1 discloses an aqueous suspension of a particulate waste material, which comprises the step of precipitating an alkaline earth metal carbonate in the said aqueous suspension of the particulate material whereby the said particulate material present at the start of the process becomes entrained in the alkaline earth metal carbonate precipitate (see Abstract). The aggregated product of such a process, which have advantageous properties when used in paper making or paper coating, or when used as a filler or extender for paints, plastics compositions and the like. The waste material is by-products of wet-mineral refining processes and waste waters from paper mills (pg. 2, ln. 1-3). The aqueous suspension is preferably dilute, which contains no more than about 20% by weight of the dry particulate material on a dry weight basis, more preferably less than 10 % by weight thereof (pg.3 , ln. 4-7). The particulate material, which is an industrial by-product such as finely divided kandite clay

mineral such as kaolin, a smectite clay such as bentonite, montmorillonite, saponite, hectorite or beidellite, paper mill effluent (which is normally a mixture of cellulose fibers and in organic fillers) (pg. 3, ln. 8-11). The alkaline earth metal carbonate is most preferably a calcium carbonate. The alkaline earth metal carbonate precipitate may be formed by introducing into the suspension of the particulate mineral a source of alkaline earth metal ions and a source of carbonate ions. This will form the desired precipitate of alkaline earth metal carbonate insitu which will entrain the particulate mineral (pg. 3, ln. 26-30). Thus, it would have been obvious to use non-consumable solids, such as fibers and/or particles, in the process of Kosin et al because EP 604,095 A1 teaches that the aggregated product, such as calcium carbonate, of such a process would have advantageous properties when used in paper making or paper coating, or when used as a filler or extender for paints, plastics compositions and the like.

Conclusion

6. No claims are allowed.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eileen E. Nave whose telephone number is (703) 305-0033.

EEN
Nave/een

March 23, 2000

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SUPERVISORY PATENT EXAMINER
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3/24/00